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CREATION OF INTERACTIVE WEB PORTAL FOCUSED ON THE CYCLING NETWORK OF THE REGION OF TURIEC

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Abstract: *Turiec is one of the traditional regions of Slovakia, which is often described as romantic, unique, quirky and one the kind (Vahot in Demmel, 2022). Not only natural heritage, but also historic-cultural and etnographic legacy allows to create region of tourism with wide variability of available choices. One of the avaliable choices is the use of existing cycling network, which covers the large part of the region, connects majority of municipalities and allows visiting surrounding mountains and foothill areas. Objective of this article is to evaluate the network of cycle paths in the region, using a selected methodical procedure for creating the "bikeability" index, while thanks to the created map outputs will be possible to point out suitable or less suitable locations, but also locations where new cycle paths could be created in the future. In this article, based on the achieved results, we propose practical submissions for pottencial new cycle paths, which could be marked in the future.*

Key words: *cycle tourism, cycle path, Turiec, web portal*

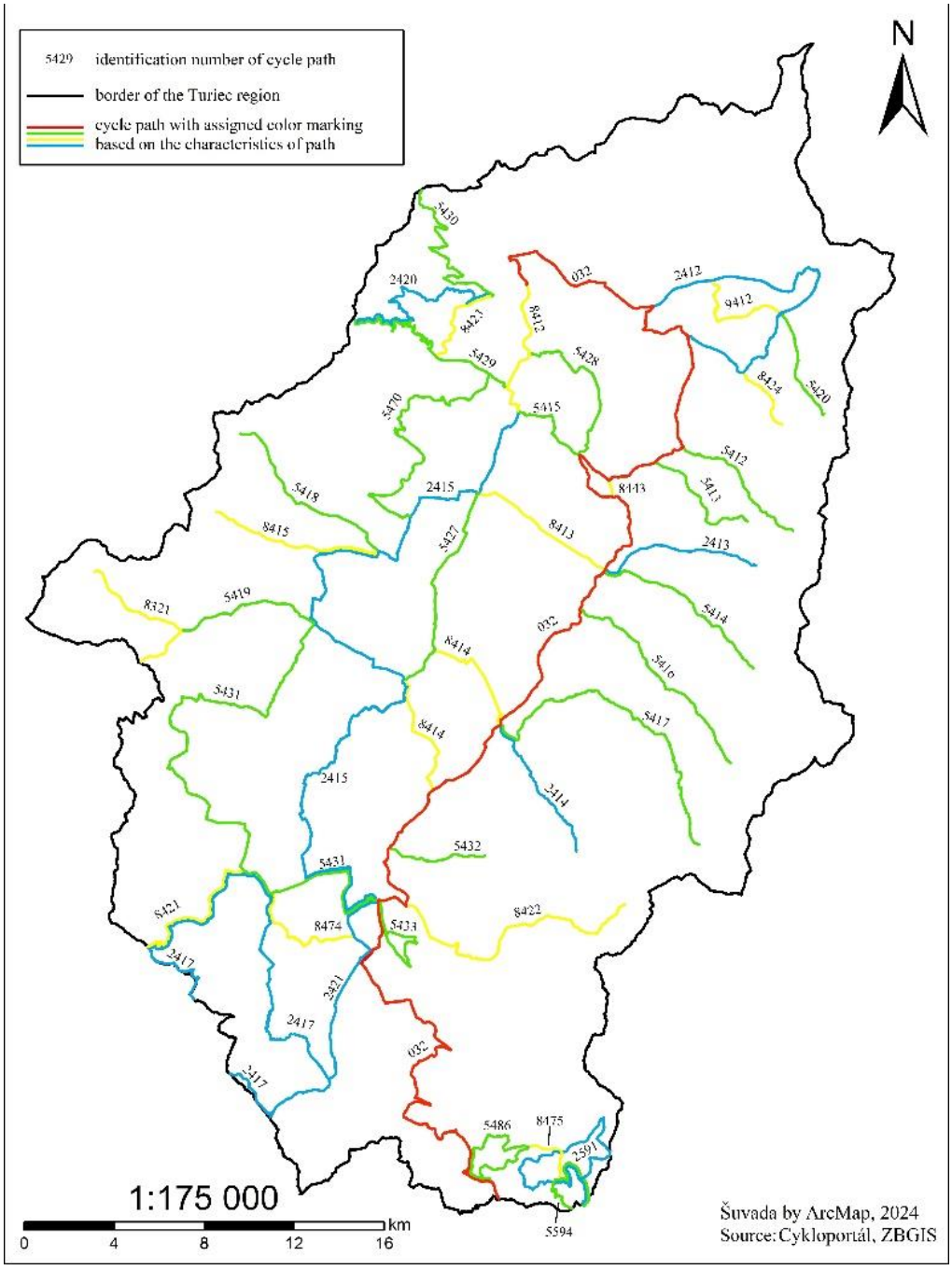
Introduction

Cycle tourism as a form of free-time activity, which is associated with exploring new places and sport, has experienced significant progress in recent decades (Matlovičová et al., 2015). With the growing interest in cycle tourism, there are also greater demands on the cycle tourism network, the offered services and many regions are trying to adapt to this type of tourism. At the regional level there are localities which are trying to meet these demands and are trying to create the best possible conditions for the participants of this type of tourism. However, many factors decide whether a given location will become tourist attractive or not. Some are distinctly individual (purpose of visiting the region, target destination, intention to spend free-time in the region, etc.), but some are rather objective (general) in characteristic

and are creating conditions for participants to be able to carry out this type of tourism and use the created cycle tourism background and infrastructure (cycling routes, resting places, services, parking lots and locations of tourist interests). On the national scale, general tendencies are to create more dense cycling network with better infrastructure, which should attract more tourists, where is significant pottencial for tourism in different forms, like sporting, cognitive tourism or relaxing tourism (MD SR, 2015).

Turiec is one of the 17 traditional cultural regions of Slovakia, which are based on etnography and its own unique characteristics and features of each region, like architecture, costumes, music, food, etc (Beňušková et al., 2005) on which territory there is a relatively dense network of officially marked cycling paths (Map 1) (total of 41). Together with the cultural and natural heritage, there is the basic premise for the creation of a tourism region focused on cycle tourism, which should be one the the main focuses of the region and individual municipalities. However, due to the large number of cycle paths located in mountain and valley area of the region, it can be difficult for a foreigner to find his way around all the options offered. Local tourist offices and associations are trying to recommend some of these cycle paths, but in most cases it´s almost the same options which are popular (turiec.com, 2024), but there is no bigger effort to represent paths which are located in remote locations of region, or are not as attractive for vast majority of cyclists as the popular ones, but still have the potencial to attract more selective indiviudals.

Map 1 Network of cycle paths in the region of Turiec



Source: Cykloportál, Geoportál, 2024

A proposal for a practical solution is the creation of an interactive web portal for cycle paths of the region of Turiec. Within the application, the user could select exactly the paths he is interested in, according to his given parameters. Tthe selection of parameters, or attributes, that are essential for cyclists is key of the successful design, development and publication of a portal that will assist visitors of the region and facilitate their route selection in an unfamiliar environment.

Methodology

The basic source of data when creating a web portal with the Instant Apps function of ArcGis portal are layers in the form of a Shapefile (.shp). These layers were created in the environment of the program ArcMap (version 10.2).

First of all, we had to determine the area of region for further work in GIS environment. Region has significant borders in the form of mountain ridges, which correspond with administrative borders of 2 present districts within the region (Martin and Turčianske Teplice), so we could use the layer of administrative districts from The Atlas of Slovak Republic (AKSR, 2002). Secondly, it was necessary to create a basic layer of cycle paths, whose attribute table we subsequently supplemented. Through the www.za.cykloportal.sk web portal (Cykloportál, 2024), we reached the interactive map environment, where we gradually clicked off cycle paths located in the region of Turiec. Using the "Download GPX file" option, we saved the GPX files of all cycle paths in the created folder. We then converted the given GPX files in the GIS environment using the Conversion to Features function (Conversion tools), while we created point layers of these GPX files. Subsequently, we used the Point To Line function (Data Management tools) to create line layers of cycle paths. Subsequently, we added columns to the attribute table aimed at more detailed information about cycle paths. These were columns with the names of the attributes: *number*, *colour*, *surface*, *paved surface*, *unpaved surface*, *main road*, *class of main road*, *services* and *parking*. The columns *colour*, *number*, *services* and *parking* were defined for the entire length of each route, but the columns *surface*, *paved surface*, *unpaved surface*, *main road* and *class of main road (CDB, 2023)* supplemented according to precisely delineated sections based on a field survey, considering the variability of each routes in the sense of the changing surface and the possible route along 1st, 2nd and 3rd class roads in some sections. The values of the attributes added to the attribute table of the cycle paths layer are listed in Table 1.

Table 1: Attributes and their values used for the creation of web portal

Atribute	**Attribute value**
number of cycle path	specific 4-digit number
colour	red
	green
	blue
	yellow
surface	reinforced
	non-reinforced
reinforced surface	asphalt (good quality)
	asphalt (repaired)
	asphalt (low quality)
	asphalt (heavily damaged)
non-reinforced surface	gravel
	fire road/rocky path
main road	yes
	no
class of main road	1
	2
	3
service	yes
	no
parking	yes
	no

Source: author, 2024

The values of the attribute in the column unpaved (surface) were defined on the basis of a field survey, during which it was found that in the case of both forest and field roads, the surface formed by gravel prevailed, which was dumped here in a certain period due to the transience of the given road for agricultural or forestry mechanisms (use as a sprinkling material on frozen forest roads against vehicle skidding; possibly as a layer of gravel used on soggy clay roads in fields). The other fields of these columns, which are complementary to the surface column, remained empty. Another layer used in the web application is the layer of points within the territory of Turiec, which may be touristically interesting for various groups of cycle tourists.

Based on the field survey and analysis of the list of cultural monuments of the Slovak Republic, a total of 165 points of tourist interests were marked in the region (ŽSK, 2024). As part of the creation of this layer in the GIS environment, the name, type and village columns were added to the attribute table. The name column contains information about the official name of the given point. In the case of religious objects, the name also contains information about affiliation to the Evangelical or Roman-Catholic church. In the type column, attributes were added according to the nature of the given point by type: technical, touristic, recreational, cultural-historical, cultural-religious and touristic-recreational. The village column contains information in which municipality the given point of tourist interest is located.

Due to the fact that in the Instant Apps and MapViewer application it´s possible to work with only one selected attribute of each layer, it was necessary to create a separate layer for each attribute (a layer containing several types of attributes just need to be saved under the name of the used attribute, then directly in the MapViewer application it is possible to select the given attribute and work only with it, without the influence of other attributes located in the given layer). After creating these layers, we saved them in created folder and processed them in .zip file. File was then uploaded to the ArcGis website in the MapViewer section. Symbology of each layer was adjusted as needed and the entire project was uploaded to the server. In the Instant Apps application, uploaded project was edited and were deployed user tools (home button, zoom controls, compass, search, share, interactive legend and list of layers). Then was whole project published directly to the server to the form of the final application. Last step was to change the privacy setting to public.

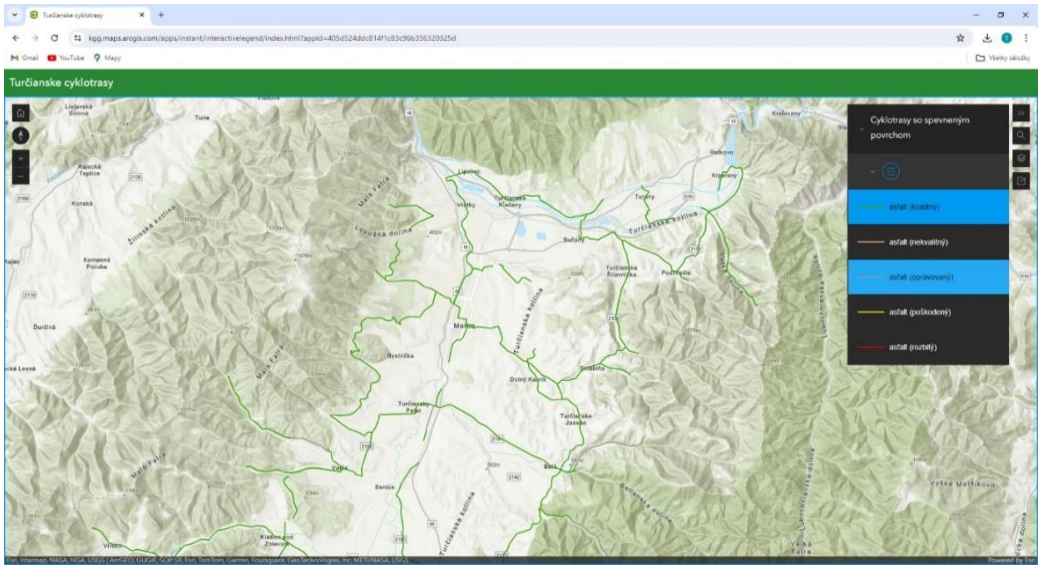
Results

Based on the methodology, we managed to create an interactive web portal that can serve as an helping tool for visitors of the region. The form of the portal may change, the information may be continuously supplemented or changed, depending on the actual condition of the cycling paths and points of interests.

Within the user environment, visitors can precisely select the route in which they are interested in according to the selected attributes (picture 1). Thanks to the shaded relief (base map), they also has an idea of the environment the route passes through (basin, ridge, valley, etc.). By selecting several layers (line and point) it is then possible to create a precise route plan according to the

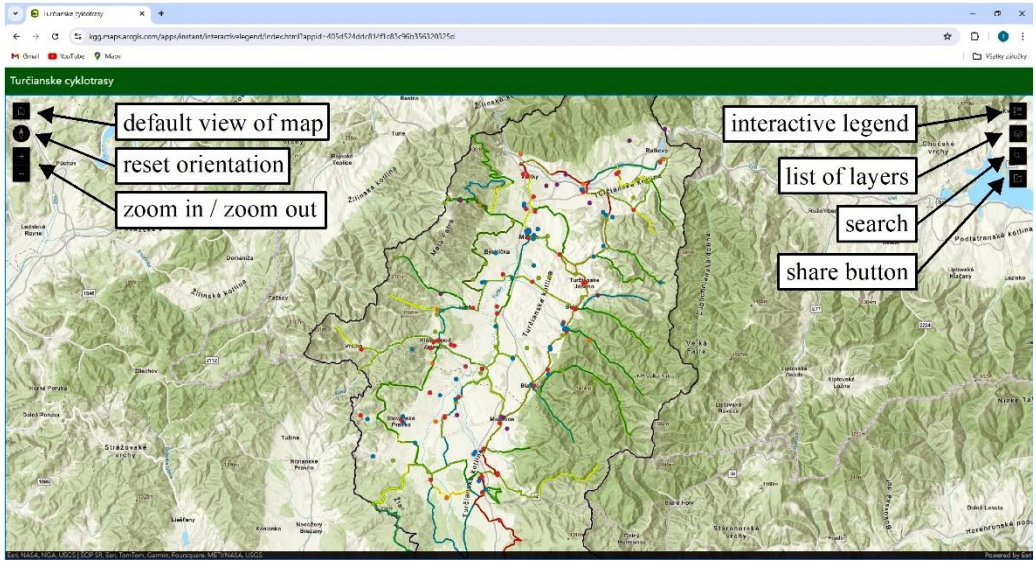
individually defined requirements of each cyclist-visitor. Thanks to the attribute values present in each layer, a relatively comprehensive database of data on all present cycle routes is created for all routes. User tools are located in the upper corners (Picture 2) of web portal – better using and coordination on the portal may take a while, but once visitors are used to it, it´s easy to navigate themselves on the portal.

Picture 1: Selection of attributes with interactive legend



Source: author, 2024

Picture 2: User tools in published form of the web portal



Source: author, 2024

Interactive web portal is available on this link:
https://kgg.maps.arcgis.com/apps/instant/interactivelegend/index.html?appid=405d524ddc814f1c83c96b356320325d

Conclusion

Creation of the interactive web portal can help with development of the region within this type of tourism. Due to the variability of the environment, the published form is not final, it can be modified if necessary. The portal as a tool for orientation in the cycling network of the selected region has great potential.

Accurate selection of routes of interests helps visitors plan their route, which ultimately has a positive impact on public opinion about the region, which can lead to more tourists coming to the region. Therefore, quality processing of the contained data and the portal itself is necessary.

However, the portal as such must be properly promoted on the internet websides of the self-governing region, municipalities, local information centers and tourist locations with a higher number of visitors. Thanks to such promotion, the portal would gain popularity and be much more sought-after. Over time, a tracking component of selected routes could be implemented, and this tracking would help direct investment and effort to locations with higher tourism potential, or on the other hand to make more attractive locations, which are not as popular as the others in nowadays.

References

BEŇUŠKOVÁ, Z., et al. (2015). Tradičná kultúra regiónov Slovenska: Prehľad charakteristických znakov. Bratislava: Slovenská akadémia vied, 2005. 241 s. ISBN 80-224-0853-0.

Cykloportál, 2024. Žilinský kraj: Cyklotrasy na mape [online]. [cit. 17.5.2024]. Dostupné na internete: https://za.cykloportal.sk/cyklotrasy-na-mape/.

DEMMEL, J., 2022. Slovenské zemianstvo v Reštavrácii Historické udalosti v pozadí románu Jána Kalinčiaka. In Slovenská literatúra: Revue pre Literárnu vedu, r. 69, č. 4, s. 388-401, 2022. ISSN 0037 – 6973.Geoportál, 2022. ZB GIS a ŠMD. Na stiahnutie [online]. [cit. 11.5.2024]. Dostupné na internete: https://www.geoportal.sk/sk/zbgis/na-stiahnutie/.

MATLOVIČOVÁ, K., KLAMÁR, R., MIKA, M. (2015). Turistika a jej formy. Prešov: Prešovská univerzita, 2015. 550 s. ISBN 978-80-555-1530-4.

Ministerstvo dopravy, výstavby a regionálneho rozvoja Slovenskej republiky, 2015. Národná stratégia rozvoja cyklistickej dopravy a cykloturistiky v Slovenskej republike [online]. [cit. 17.5.2024]. Dostupné na internete:

https://www.minv.sk/swift_data/source/rozvoj_obcianskej_spolocnosti/participacia/2021/vzdelavanie/na_obcanoch_zalezi/mobilita/Cyklostrategia_2013.pdf.

Slovenská agentúra životného prostredia, 202-2024. Atlas krajiny Slovenskej republiky [online]. [cit. 15.5.2024]. Dostupné na internete: Atlas krajiny SR - Webová mapová aplikácia (sazp.sk).

Slovenská správa ciest, 2023. Kraje SR – 150 000/ podrobná mapa [online]. [cit. 16.5.2024]. Dostupné na internete: https://www.cdb.sk/sk/Vystupy-CDB/Mapy-cestnej-siete-SR/Mapy-krajov/Zilinsky-kraj.alej.

Turiec, 2024. Cykloturistický program: Odporúčané trasy [online]. [cit. 17.5.2024]. Dostupné na internete: https://turiec.com/balicky/e-bike-program-v-turci/.

Žilinský samosprávny kraj, 2024. Národné kultúrne pamiatky: región Turiec [online]. [cit. 10.5.2024]. Dostupné na internete: https://www.zilinskazupa.sk/nas-kraj/kulturne-pamiatky/narodne-kulturne-pamiatky/.